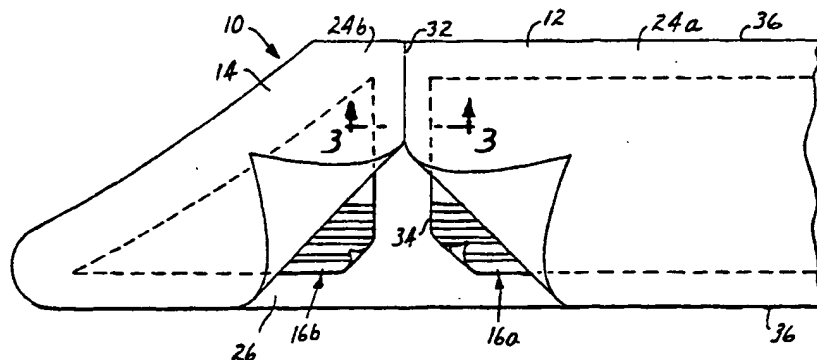




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(54) Title: DEVICE FOR ALIGNING GRAPHICS AND METHODS FOR MAKING SUCH A DEVICE



## (57) Abstract

A device for aligning a graphic on a surface with respect to a fixed reference on the same or an adjacent surface. The device comprises a graphic carrier (12) which, in turn, comprises a graphic carrier release liner (24) and a first graphic. The first graphic includes opposed first and second major faces and is removably secured to the release liner at one of the major faces. A premask (26) is releasably attached to the first graphic at the other major face. The graphic carrier release liner includes means such as a perforated cut or a cut edge (32) for aligning the first graphic with respect to the fixed reference.

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**DEVICE FOR ALIGNING GRAPHICS AND METHODS FOR  
MAKING SUCH A DEVICE**

BACKGROUND OF THE INVENTION

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Field of the Invention

This invention relates to a device for aligning graphics and, more particularly, to a device for aligning a graphic with respect to a fixed reference. The invention further relates to methods for making such a device.

15

Description of the Related Art

On site application of paint directly to a surface to be decorated is a time-honored method for providing decorative graphic designs. While this approach provides many desirable aesthetic and physical features including realistic appearance, color flexibility, and durability to abrasion, weathering and chemical degradation, it suffers from many disadvantages. Such disadvantages include the need for relatively skilled labor, long application times, and potential contamination to adjacent areas and mechanical equipment.

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As a result, various prefabricated graphics have been developed. A typical prefabricated graphic comprises a plastic film having an adhesive on one surface and, optionally, a design or decoration on the opposite surface. The decorated surface is temporarily protected by an adhesive coated premask while the adhesive-bearing side is overlaid with a removable release liner until the graphic is applied.

Prefabricated graphics are widely used in the automotive industry to enhance, highlight and personalize the aesthetic appearance of motor vehicles. With regard to motor vehicles, some graphics extend in an interrupted or discontinuous manner from one surface to an adjacent but spaced apart surface. Other graphics extend continuously along a single surface. Frequently, the graphics are positioned relative to a fixed reference such as a body panel edge, a door edge, a window surround, a molding, a trim piece or another graphic. It may be important for the graphic to be carefully aligned with respect to the fixed reference in order to present an appealing, high quality, precision appearance.

Presently known graphic applicators do not readily permit the precise alignment of graphics demanded by automotive manufacturers. Using the prefabricated graphic described above as an example, the graphic is typically applied to a motor vehicle by removing the release liner and adhering the plastic film to the vehicle. If the graphic is to be positioned with respect to a fixed reference, alignment indicia (such as carats, dots, squares, notches, cut edges, etc.) on the removable premask are aligned with the reference.

Precise alignment of the graphic requires a fair amount of skill and attention to detail. More importantly, however, presently known techniques for fabricating graphics inherently make precise alignment of the graphic difficult. In a conventional graphic assembly process, an adhesive coated plastic film (i.e., the graphic) is laminated to a removable release liner. The plastic film may

be decorated before or after the lamination to the release liner or not decorated at all. The graphic and release liner are then passed to a cutting device that "kiss-cuts" the plastic film without cutting through the release liner so as to define the shape of the graphic. Excess plastic film is then removed or weeded. The removable premask is laminated to the plastic film and the composite structure is transferred to a second cutting device which cuts through the release liner, the premask, and, optionally, the film and which also provides the alignment indicia on the premask. For the graphic to eventually be properly aligned with respect to a surface requires that the premask/graphic/release liner construction be precisely placed in the second cutting device. This does not always occur.

Consequently, in those graphic applicators which are presently known, the minimum tolerance range is broad. Thus, there remains considerable need for a graphic applicator which permits graphics to be precisely aligned relative to a fixed reference such as a panel edge or an adjacent graphic.

#### SUMMARY OF THE INVENTION

In general, this invention relates to a device for aligning a graphic on a surface with respect to a fixed reference on the same or an adjacent surface. The fixed reference may be a panel edge, a door edge, a trim strip, a window surround, another graphic, a mirror, an antenna, etc. The invention is particularly useful when the two surfaces are spaced apart.

In one embodiment, the device comprises a release liner having opposed first and second ends

and a graphic that is removably secured to the release liner. The release liner includes means for aligning the graphic with respect to the fixed reference. The alignment means is positioned between  
5 the opposed first and second ends and may be a perforated cut or a through cut in the release liner.

In an alternative embodiment, the device comprises a graphic carrier which, in turn, comprises, a graphic carrier release liner and a  
10 first graphic. The first graphic includes opposed and second major faces, the graphic being removably secured to the release liner at one of its major faces.

The device further comprises an extension  
15 portion adjacent to the graphic carrier. The extension portion comprises a second graphic having opposed first and second major faces and a second release liner. The second graphic is adjacent to the first graphic. The second release liner is  
20 adjacent to and at least substantially separated from the graphic carrier release liner. The device further includes a continuous premask that is releasably attached to the other major face of both the first and second graphic.

25 The at least substantial separation between the graphic carrier release liner and the second release liner provides means for aligning the first graphic. The alignment means may comprise a perforated cut in the release liner or an edge of the  
30 release liner that has been provided by through cutting the release liner.

The alternative embodiment is particularly useful when the first graphic is to be aligned with another graphic that has already been applied. In

these cases, the extension portion may include additional means for aligning the first graphic, such as a graphic design formed on the second graphic.

5 Presently known graphic applicators have a wide range of tolerances. A graphic applicator according to the invention allows a graphic to be positioned with a precision not heretofore possible.

10 The invention also relates generally to methods of providing a graphic applicator according to the invention. In one method, a graphic having first and second opposed major faces is provided and a release liner having opposed first and second ends is removably secured thereto. The release liner is at least substantially cut through between its  
15 opposed ends without cutting through a corresponding portion of the graphic so as to provide the means for aligning the graphic.

In another embodiment, the method comprises the steps of providing a first graphic,  
20 having first and second opposed major faces, removably securing a graphic carrier release liner having opposed first and second ends to one of the major faces of the graphic, cutting through the graphic without cutting through a corresponding  
25 portion of the release liner, and simultaneously cutting through another portion of both the graphic and the release liner. The second cutting operation provides the means for aligning the first graphic with the fixed reference.

30

#### BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood with reference to the following drawings in which similar reference characters designate corresponding

or analogous components throughout and in which:

FIG. 1 is a fragmentary, schematic bottom plan view of a precursor construction for providing a device for aligning graphics according to the invention and with several of the layers thereof having been partially removed;

FIG. 2 is a fragmentary, elevational view of a device for aligning graphics according to the invention and similar to FIG. 1 but after the performance of certain cutting operations thereon and with several of the layers thereof having been partially peeled apart;

FIG. 3 is a sectional view taken along lines 3--3 of FIG. 2;

FIG. 4 is a sectional view similar to FIG. 3 but showing an alternative embodiment of the invention; and

FIG. 5 is an enlarged, fragmentary, schematic, elevational view illustrating the application of a graphic to a surface and aligned with a fixed reference thereon using the graphic applicator of FIGS. 2 and 3, selected portions thereof having been removed to more clearly show the underlying construction.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to the drawings, FIGS. 2 and 3 illustrate a device 10 for aligning graphics according to the invention (hereinafter referred to as a graphic applicator). Graphic applicator 10 comprises a graphic carrier 12 and an extension portion 14. Graphic carrier 12 comprises a first graphic 16a which, in turn, includes a film 18a having an optional graphic design 20a (illustrated as



several parallel pin stripes) on one face and an optional adhesive 22a on an opposite (or, though not shown separately, the same) face. The graphic carrier further includes a removable graphic carrier release liner 24a on a major (e.g., bottom) face of the graphic.

As explained more fully below, graphic carrier 12 and extension portion 14 are cut from common stock. Consequently, the constructions of graphic carrier 12 and extension portion 14 are usually the same. The similar components of the extension portion are identified by the reference numerals used to describe the construction of the graphic carrier, except that the reference numerals include the letter "b" rather than the letter "a". Thus, extension portion 14 comprises a second graphic 16b, a second film 18b, an optional second graphic design 20b, an optional second adhesive 22b, and a second removable release liner 24b.

Because graphic carrier 12 and extension portion 14 are cut from common stock, their individual components (i.e., graphics 16a and 16b, films 18a and 18b, etc.) are not provided until certain cutting operations, described more fully below, are performed. Consequently, a composite precursor construction 10' exists prior to the performance of these cutting operations. As shown in FIG. 1, composite precursor construction 10' comprises a graphic 16, which includes a graphic film 18 having an optional graphic design 20 formed thereon, an optional adhesive layer 22, and a release liner 24. (The various layers of FIG. 1 have been partially removed to more clearly show the construction.)

With reference to FIGS. 2 and 3 again, graphic applicator 10 further comprises a removable premask 26 which is common to and overlies both graphic carrier 12 and extension portion 14, the significance of which is explained more fully hereinbelow. More specifically, premask 26 is releasably attached to major faces of graphic carrier 12 and extension portion 14 which are opposite the major faces to which graphic carrier release liner 24a and second release liner 24b are removably secured. Premask 26 is added after the necessary cutting operations have been performed on precursor construction 10'. Premask 26 comprises a protective layer 28 having an adhesive layer 30 thereon.

The following discussion of the several elements of graphic applicator 10 refers specifically only to aspects of graphic carrier 12, it being understood that this discussion applies equally to the corresponding components of extension portion 14, unless noted otherwise. Graphic film 18a may be selected from a variety of polymeric materials such as polyolefins (e.g., polyethylene and polypropylene), flexible poly(vinyl halides) (e.g., poly(vinyl chloride), copolymers of ethylene, propylene and vinyl chloride, polyesters (e.g., polyethylene terephthalate), polyimides, polyurethanes, polycarbonates, polyamides, poly(phenylenesulfide), as well as blends and copolymers thereof. Nonpolymeric materials such as paper may also be used and are included within the scope of the term graphic film as used herein. The film may have a smooth, matte or other textured finish depending on the particular appearance which is to be imparted to the graphic. The film may be

clear, pigmented or tinted.

Graphic design 20a is optional and, if included, may be provided by a variety of inks and the like, including those based on urethanes, acrylics, vinyls, vinyl-acrylic blends, and epoxies. The graphic design may include or be supplemented with non-colored or clear materials to provide a protective top coat (not shown separately in the drawings). In the formation of precursor construction 10', graphic design 20 may be applied to graphic film 18 by a variety of conventional, techniques such as screen printing, ink-jet printing, electronically, electrographically, electrophotographically and thermo-mass transfer, the particular technique selected depending upon the materials used to provide the graphic design and the graphic film. It is possible for graphic 16a to include graphic design 20a but for graphic 16b to not be provided with a corresponding graphic design 20b.

Adhesive 22a is optional and may be provided by any of a wide variety of adhesives conventionally employed to bond graphic articles to a surface. Pressure-sensitive adhesives are particularly useful in this regard. Adhesives based on acrylics, natural rubbers, styrene-isoprene-styrene block copolymers, and silicone-based adhesives such as polydimethylsiloxane and polymethylphenylsiloxane may be used. Adhesives useful in the invention may incorporate additives such as ground glass, titanium dioxide, silica, glass beads, waxes, tackifiers, low molecular weight thermoplastics, oligomeric species, plasticizers, pigments, metallic flakes, metallic powders, etc. so long as they are provided in an amount that does not

materially adversely affect the ability of the adhesive to bond the graphic film to a surface.

5 The surface of the adhesive which is to be applied to a substrate may be treated to permit repositioning of the graphic before a permanent bond is formed. Adhesive repositionability may be achieved by providing a layer of minute glass bubbles on the adhesive surface, as illustrated in U.S. Pat. No. 3,331,729 to Danielson et al. Alternatively, the  
10 adhesive may be formulated to provide low initial adhesion but greater ultimate adhesion. An example of such an adhesive is an isooctyl acrylate/acrylimide adhesive to the backbone of which is grafted a monovalent siloxane polymeric moiety  
15 having a number average molecular weight between about 500 and 50,000.

If an adhesive is not provided, the graphic may be secured to an article by surface tension or by applying adhesive directly to the article.

20 Graphic carrier release liner 24a protects adhesive 22a (or the corresponding major face of graphic film 18a if no adhesive is provided) from abrasion, dirt and other adhesion reducing contaminants until first graphic 16a has been  
25 applied. The release liner should be readily removable without damage to the graphic. Release liners conventionally employed for protecting adhesively bonded graphics may be used in accordance with the present invention and include those which  
30 are either resin or paper-based and having silicone, polysilicone, fluorocarbon, polyfluorocarbon, wax or polyolefin coatings thereon.

As noted hereinabove, premask 26 extends continuously and uninterrupted over both graphic

carrier 12 and extension portion 14 and is releasably secured to major faces thereof opposite the major faces which engage release liner sections 24a and 24b. The premask may be provided by any of the materials which have been conventionally employed with graphics. The premask comprises protective layer 28 with adhesive 30 coated thereon. The protective layer may be paper or a polymeric film. Materials suitable for the adhesive include natural rubbers, acrylics, and other adhesives which have been conventionally employed with premasks. Pressure-sensitive adhesives are particularly useful. Adhesive 30 should demonstrate less adhesion to first graphic 16a than adhesive 22a (if included) provides between graphic film 18a and the surface to which the graphic is to be applied. Thus, the premask may be readily stripped from the first graphic once the graphic has been applied to a surface.

In assembly, graphic applicator 10 is generally established by providing composite precursor construction 10' and performing certain cutting operations thereon. Removable premask 26 is applied after performing the cutting operations. Thus, in one approach, a roll or sheet of bulk graphic film 18 of appropriate dimensions is provided. If desired, one face of the bulk film has optional adhesive 22 deposited thereon by roll coating, extrusion coating, gravure printing, Meyer bar, knife blade and the like. Release liner 24 is subsequently laminated or otherwise applied as a continuous sheet to bulk film 18. Optional graphic design 20 may be applied to the exposed face of the bulk film such as by screen printing and the like. In the embodiment of FIG. 1, application of the

design and the adhesive to bulk film 18 provides graphic 16. Adding release liner 24 provides the composite precursor construction 10' shown in FIG.

1. The various assembly steps may be carried out in a different order if desired. For example, the release liner may be applied after the decorative design is provided. This is useful where the graphic design and the adhesive are applied to/deposited on the same face of the graphic film.

10 In any event, once composite precursor construction 10' has been provided, it is passed to a cutting station where a cutting device such as a steel rule die, a hot magnesium die, a combination of these dies, a computer controlled cutting device  
15 (e.g., a laser), or the like simultaneously performs, first and second cutting operations by, respectively, "kiss-cutting" and "through-cutting" the precursor construction. More specifically, the cutting device "kiss-cuts" graphic 16 but does not sever the  
20 corresponding underlying portion of release liner 24. However, the same cutting device also substantially "through-cuts" composite precursor construction 10' to substantially sever both graphic 16 and the corresponding underlying portion of release liner 24.

25 The "kiss-cutting" operation provides graphic 16 with its overall shape. Once graphic 16 has been "kiss-cut," excess or waste material is removed or weeded to establish graphic carrier 12 and extension portion 14 comprising their respective  
30 individual elements (designated separately above with the letters "a" and "b" appended to the appropriate reference numeral).

The "through-cutting" operation substantially severs or separates release liner 24

thereby creating an alignment edge 32 (the dimensions of the gap being exaggerated in FIG. 3) between release liner sections 24a and 24b, the significance of which is explained more fully hereinbelow. By  
5 "substantially severs or separates" it is meant that the release liner can be cut completely through or perforated such that the perforations can be easily broken to separate release liner 24 into sections 24a and 24b. Importantly, the distance between an end 34  
10 of graphic 16a and alignment edge 32 can be carefully controlled by appropriate configuration of the "kiss-cut" and "through-cut" elements of the cutting device.

Once composite precursor construction 10' has been simultaneously "kiss-cut" and "through-cut,"  
15 premask 26 may be laminated or otherwise applied. Once premask 26 has been applied, graphic applicator 10 is passed to a final cutting station where release liner 24 and the premask are "through-  
20 cut" to provide the graphic applicator with its final configuration as defined by peripheral edge 36 in FIG. 2.

An alternative embodiment is shown in FIG. 4 wherein a graphic applicator 40 according to the  
25 invention comprises a graphic 42 similar to graphic 16 and including a graphic film 44 having an optional graphic design 46 on one major face and an optional adhesive 48 on the opposite (or the same) major face. A premask 50 (similar to premask 26) is releasably  
30 laminated or otherwise attached to one major face of graphic 42 and includes a protective layer 52 and an adhesive layer 54. A release liner 56 is removably laminated or otherwise secured to the other major face of graphic 42 and is similar to release liner

24. Release liner 56 includes first and second  
opposed ends 57 and 58 and is segregated into a first  
release liner section 56a that is adjacent to and at  
least substantially separated from (either by a  
5 through cut or a perforated cut) a second release  
liner section 56b. The separation between release  
liner sections 56a and 56b (or one of the facing  
release liner section edges) is designated by the  
reference numeral 59, is functionally analogous to  
10 alignment edge 32, and provides means for aligning  
graphic 42 with respect to a fixed reference. (The  
dimensions of the separation between release liner  
sections 56a and 56b is exaggerated in FIG. 4.)

The embodiment of FIG. 4 is particularly  
15 useful when graphic 42 is to be applied to a surface  
that wraps around a corner; for example, a motor  
vehicle bumper that extends along the rear of the  
vehicle and wraps around to the side of the vehicle,  
the fixed reference being a feature on the bumper.

20 The embodiment of FIG. 4 may be provided by  
starting with a composite precursor construction  
having essentially the configuration shown in FIG. 1.  
More specifically, a composite precursor construction  
like that shown in FIG. 1 is "kiss cut" with out  
25 cutting through a corresponding underlying portion of  
graphic 42 (the precursor construction being arranged  
in the cutting device in an "upside down"  
orientation). However, the same cutting device also  
"through cuts" the composite precursor construction  
30 to sever both graphic 42 and the corresponding  
overlying portion of release liner 56. The "kiss  
cutting" operation provides alignment edge 59 by  
substantially severing or separating release liner 56  
into release liner sections 56a and 56b. The



"through cutting" operation provides both the graphic and the applicator with their final shapes.

5 If the embodiment of FIG. 4 is provided with a graphic design an alternative manufacturing process may be employed. In the alternative process, graphic film 44 is provided with registration holes (not shown in the drawings) which receive pins that secure the film while the graphic design is formed on the graphic film. Once a composite precursor  
10 construction like that shown in FIG. 1 is provided (which may also include a premask that has registration holes). It is placed in a first cutting device in an upside down configuration and release liner 56 is cut without cutting through a  
15 corresponding portion of the graphic film. The cut in the release liner provides the alignment means. Once so cut, the precursor construction is transferred to a second device which cuts through the graphic film, the release liner and the premask (if  
20 provided). To ensure proper registration of the graphic design with the alignment means, pins in the first and second cutting devices are received by the registration holes in the graphic film.

25 Contrary to the above described processes, in the manufacture of presently known graphics, the corresponding first cutting step "kiss-cuts" the graphic film without "through-cutting" the release liner. Thus, presently known graphic applicators do not comprise a release liner having an alignment edge  
30 formed therein. A premask is separately applied followed by a second cutting operation in a separate cutting device which "through-cuts" the release liner and the premask and which provides the alignment indicia on the premask. (Constructions in which a

graphic applicator comprises analogous graphic carrier and extension portions, the release liner between the two being severed, are known but the alignment means is carried by the premask.)

5                   The use and operation of either graphic applicator 10 or graphic applicator 40 follows readily from the previously described constructions. Turning now to FIG. 5 (and with specific reference to graphic applicator 10) first graphic 16a is to be  
10                   applied to a surface 60, such as a motor vehicle body panel, in vertical alignment with and at a predetermined distance from a fixed reference 62. Fixed reference 62 could be a body panel edge, a door  
15                   edge, a window surround, a molding, a trim piece, a mirror housing, an antenna, another already applied graphic, etc. on the same surface or on an adjacent noncontiguous surface to which the graphic is to be applied, the graphic applicator being fully useable in either context as explained below. Furthermore,  
20                   although, fixed reference 62 is illustrated in a vertical orientation, this is merely a schematic representation, and the fixed reference could extend horizontally or at some intermediate angle.

                  In order to vertically align graphic 16a  
25                   with fixed reference 62, alignment edge 32 is superimposed on (i.e., aligned with) the fixed reference. Because alignment edge 32 was established in the same cutting step as end 34 of graphic 16a, edge 32 and end 34 are inherently aligned with  
30                   respect to each other. Consequently, end 34 (as well as the rest of first graphic 16a) is also inherently aligned with fixed reference 62 once alignment edge 32 is superimposed. Furthermore, the distance between end 34 and fixed reference 62 is determined

by the distance between end 34 and alignment edge 32, which distance can be tailored by appropriate configuration of the "kiss-cut" and "through-cut" elements of the cutting device. Thus, alignment edge 32 provides a means for aligning and spacing end 34 and the rest of first graphic 16a relative to a fixed reference by positioning the alignment edge at the fixed reference.

Typically, release liner 24a is peeled away before alignment edge 32 is positioned relative to fixed reference 62. Removal of release liner section 24a increases the amount of light which is transmitted through graphic carrier 12 relative to extension portion 14 thereby highlighting the position of alignment edge 32 and facilitating its use as an alignment means with respect to fixed reference 62. First graphic 16a is adhered to surface 60 by applying pressure (for example, by using a squeegee) to premask 26. Once first graphic 16a has been so applied, graphic film 18a usually has sufficient integrity to be squeegeed flat without developing bubbles, wrinkles, creases or swells. Rendering adhesive 22a repositionable may facilitate applying the graphic. Once first graphic 16a has been applied to surface 60, premask 26 is stripped away. (Extension portion 14 is removed simultaneously with premask 26 because the premask is continuous over both graphic carrier 12 and the extension portion.)

Extension portion 14 is particularly useful for horizontally aligning first graphic 16a with an adjacent portion of another graphic 64 which has already been applied. In such constructions, graphic 16b of extension portion 14 includes graphic design

20b which complements the already applied graphic, and preferably, any graphic design 16a associated with graphic carrier 12. Thus, if first graphic 16a provides one section of a larger graphic (for  
5 example, a pinstripe which runs the length of a motor vehicle), portions of which have already been applied (for example to a front door), then second graphic 16b on extension portion 14 may be overlaid on already applied graphic 64. In this manner, first  
10 graphic 16a (which, for example, is to be applied to the adjacent rear door) can be horizontally aligned with the front door graphic. (Presumably alignment edge 32 would be superimposed on the edge of one of the doors or on an edge of the already applied  
15 graphic so as to also vertically align first graphic 16a). Surface 66 to which graphic 64 has been applied may be separated from surface 60 (as shown in FIG. 5) or contiguous therewith.

Graphic applicator 40 is used in a manner  
20 analogous to that described for graphic applicator 10. More specifically, first release liner section 56a is removed thereby highlighting the position of alignment edge 59 which is superimposed on (i.e., aligned with) the fixed reference. That portion of  
25 graphic 42 which overlay release liner section 56a is squeezed flat. Then, in a preferably single continuous motion, release liner section 56b is removed and the remainder of graphic 42 is applied to the surface.

30 Thus, in graphic applicator 40 only release liner sections 56a and 56b are removed and discarded. In graphic applicator 10, release liner section 24a is removed along with the entire extension portion 14.

A significant aspect of the invention resides in the provision of a graphic applicator in which the means for aligning the graphic with respect to a fixed reference is carried by the release liner.

5 The alignment means is a through cut or a perforated cut in the release liner. The alignment means is positioned either between opposed ends of the release liner (such as shown in FIG. 4) or provides the separation between the graphic and a disposable

10 extension portion (such as shown in FIGS. 2 and 3). The release liner can be kiss cut to provide the alignment means, with simultaneous through cutting of other portions of the graphic and the release liner to provide the graphic with its overall shape.

15 Alternatively, the through cutting of the graphic and the release liner can occur separately from the kiss cutting of the release liner if registration holes in the applicator receive pins in the first and second cutting devices, so long as the registration holes

20 were used during the formation of a graphic design on the graphic film. In a third approach, the alignment means may be formed in a cutting operation which "kiss-cuts" the graphic while simultaneously "through-cutting" other portions of the graphic and

25 the release liner, the "through-cut" release liner edge being the alignment means. The simultaneous second cutting operation inherently aligns an end of the graphic with the alignment means and establishes the spacing therefrom.

30 Graphic applicators according to the invention provides an efficient, effective, readily usable technique for aligning a graphic relative to a fixed reference and with a precision not heretofore believed possible.

Reasonable variations or modifications of the foregoing specification and drawings are possible without departing from the scope of the invention which is defined in the accompanying claims.

5

CLAIMS

The embodiments for which an exclusive property or privilege is claimed are defined as follows:

5

1. A device for aligning a graphic on a surface with respect to a fixed reference on the same surface or on an adjacent surface, the device comprising a graphic removably secured to a release liner having  
10 opposed first and second ends wherein the release liner includes, between the opposed first and second ends, means for aligning the graphic with respect to the fixed reference.

15

2. A device for aligning a graphic on a surface with respect to a fixed reference on the same surface or on an adjacent surface, the device comprising:

(a) a graphic carrier comprising:

(i) a graphic carrier release liner;

20

and

(ii) a first graphic having opposed first and second major faces, the first graphic being removably secured to the release liner at one of the major faces of the graphic;

25

(b) an extension portion adjacent to the graphic carrier, the extension portion comprising:

(i) a second release liner adjacent to and at least substantially separated from the graphic carrier release liner; and

30

(ii) a second graphic adjacent to the first graphic and having opposed first and second major faces, the second release liner being removably secured to one of the major faces of the second graphic; and

35

(c) a continuous premask releasably attached to both the other major face of the first graphic and the other major face of the second graphic;

wherein the at least substantial separation between the graphic carrier release liner and the second release liner provides means for aligning the first graphic with respect to the fixed reference.

5

3. A device according to claim 2 wherein the first graphic includes an end and further wherein the distance between the end of the first graphic and the fixed reference is substantially equal to the distance between the alignment means and the fixed reference when the first graphic is on the surface to which it is to be applied.

10

4. A device according to claim 2 wherein the second graphic includes additional means for aligning the first graphic with respect to a fixed reference.

15

5. A method of making a device for aligning a graphic, the method comprising the steps of:

20 providing a graphic having opposed first and second major faces;

removably securing a release liner having opposed first and second ends to one of the major faces of the graphic; and

25 a first cutting operation comprising at least substantially cutting through a portion of the release liner between the opposed first and second ends thereof without cutting through a corresponding portion of the graphic so as to provide means for aligning the

30 graphic.

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6. A method according to claim 5 further comprising a step of releasably attaching a premask to the other major face of the graphic before at least substantially cutting through the release liner.

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7. A method according to claim 6 further comprising a second cutting operation conducted simultaneously with the first cutting operation and comprising cutting through the release liner, the graphic and the premask.

8. A method of making a device for aligning a graphic, the method comprising the steps of:

providing a first graphic having opposed first and second major faces;

removably securing a graphic carrier release liner having opposed first and second ends to one of the major faces of the first graphic;

a first cutting operation comprising cutting through the first graphic without cutting through a corresponding portion of the graphic carrier release liner; and

a second cutting operation conducted simultaneously with the first cutting operation and comprising cutting through the first graphic and at least substantially cutting through a corresponding portion of the graphic carrier release liner between the opposed first and second ends thereof;

whereby means for aligning the first graphic is provided by the second cutting operation.

9. A method according to claim 8 further comprising the step of releasably attaching a premask to the other major face of the first graphic after performing the first and second cutting operations.

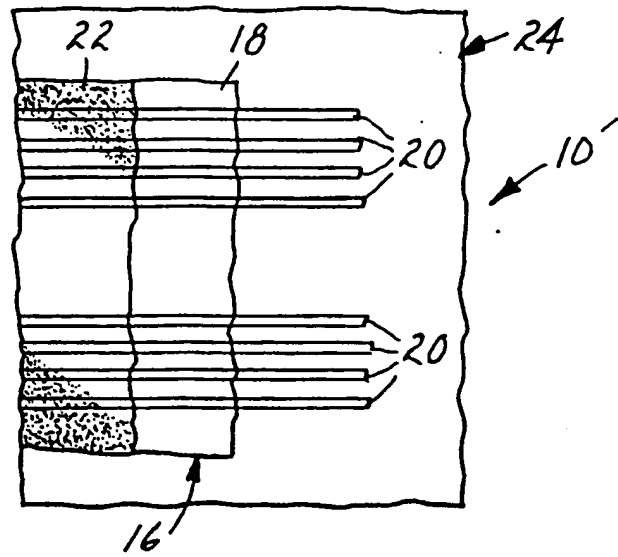


FIG. 1

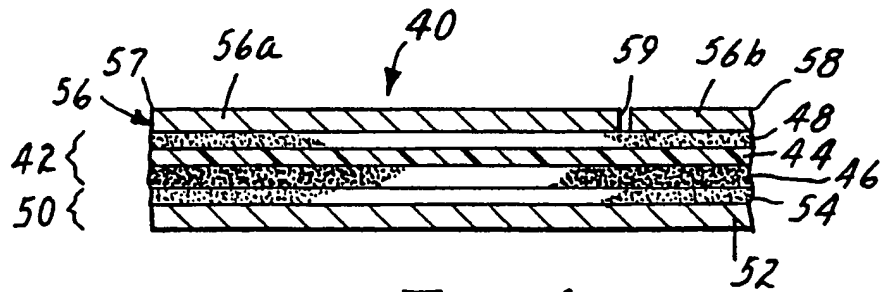


FIG. 4

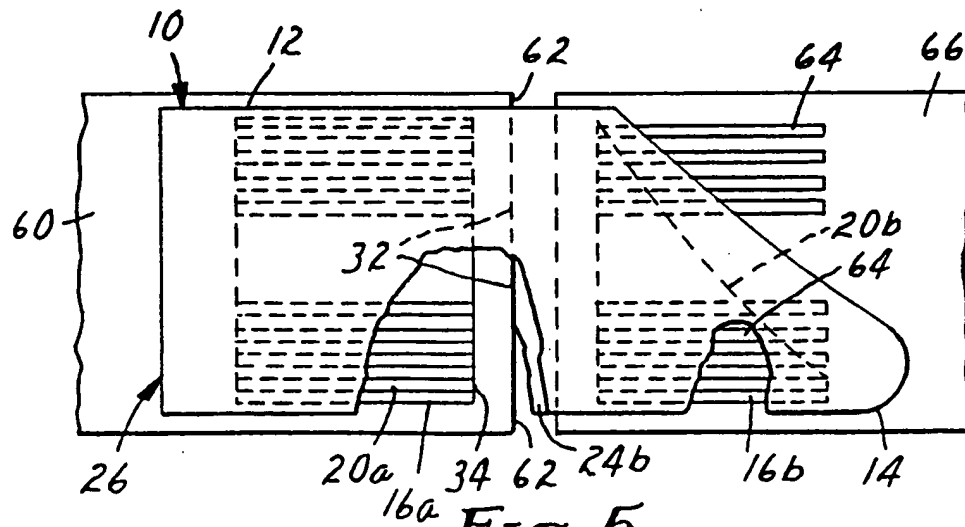
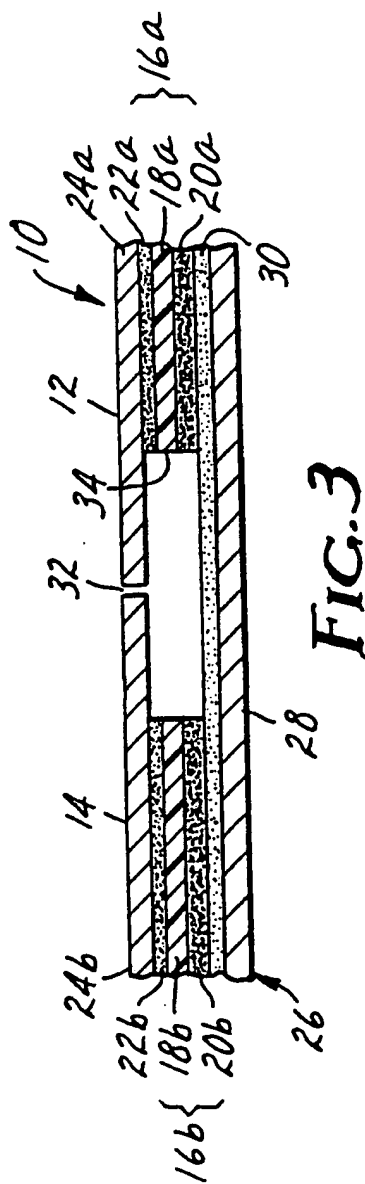
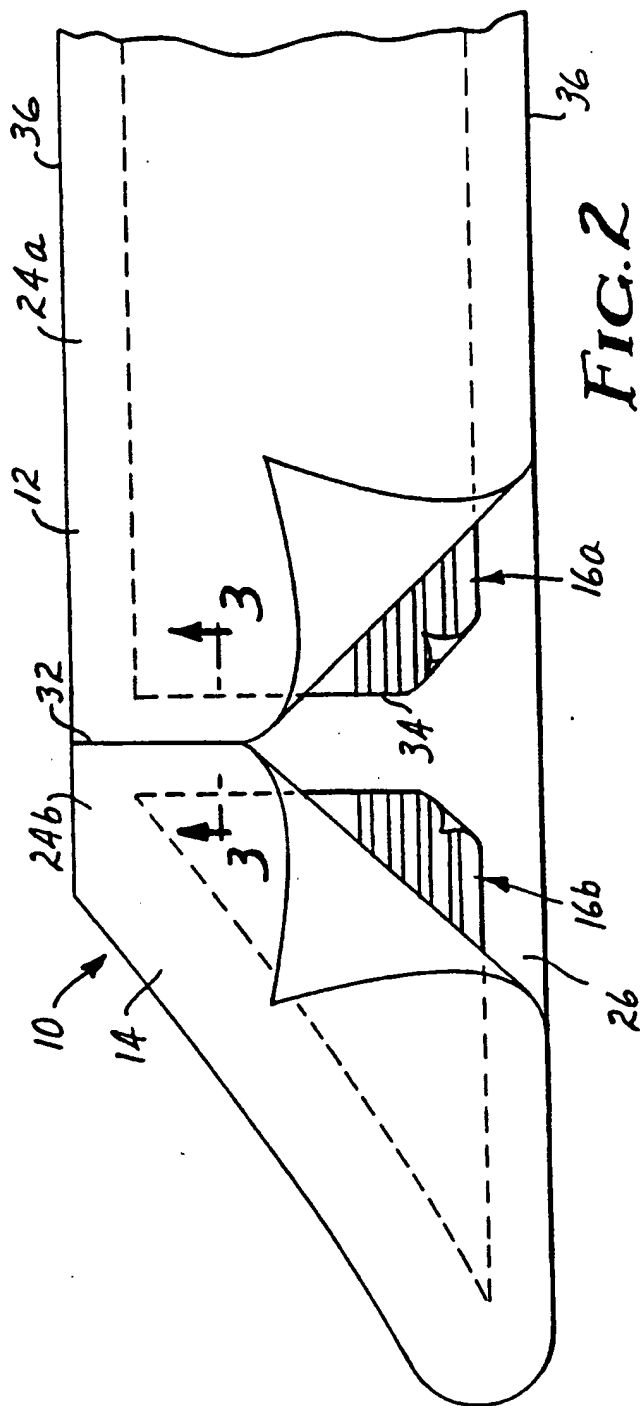


FIG. 5



# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 94/01534

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 5 B44C1/16 B44C1/17

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 5 B44C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,3 484 972 (R. E. CHRISTMAN) 23 December 1969 see column 2, line 60 - column 4, line 73 ----	1-3,5,6
A	US,A,4 015 352 (D. PRANGE) 5 April 1977 see column 5, line 42 - column 8, line 40 ----	1-5
A	US,A,5 026 584 (D. J. LOGAN) 25 June 1991 see column 3, line 50 - column 7, line 31 -----	1,2,5,6

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- \* "A" document defining the general state of the art which is not considered to be of particular relevance
- \* "E" earlier document but published on or after the international filing date
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- \* "P" document published prior to the international filing date but later than the priority date claimed

- \* "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- \* "&" document member of the same patent family

Date of the actual completion of the international search

15 July 1994

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